



Tuff-Flash™ LO Plus

Safety Data Sheet

According to Federal Register/Vol. 77, No. 58/Monday, March 26, 2012/Rules and Regulations

Revision Date: N/A

Date of issue: 08/08/2017

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Liquid

Product Name: Tuff-Flash™ LO Plus Part A

Product Code: 7817-5

Intended Use of the Product

Waterproofing, chemical containment premix. For professional use only.

Name, Address, and Telephone of the Responsible Party

Manufacturer

The Garland Company, Inc.
3800 East 91st Street
Cleveland, Ohio 44105-2197
T-800-762-8225
F-216-641-0633
www.garlandco.com

Supplier

The Garland Company, Inc.
3800 East 91st Street
Cleveland, Ohio 44105-2197
T-800-762-8225
F-216-641-0633
www.garlandco.com

Garland Canada, Inc.
209 Carrier Drive
Toronto, Ontario M9W 5Y8
T-416-747-7995
F-416-747-1980
www.garlandco.com

Emergency Telephone Number

Emergency Number: 1-800-262-8200 (CHEMTREC)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Flam. Liq. 3	H226
Acute Tox. 4	H302
Skin Irrit. 2	H315
Eye Dam. 2A	H319
Germ Cell Muta. 1	H360
Carc. 1	H350
STOT RE 1	H372

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)



Signal Word (GHS-US)

: Danger

Hazard Statements (GHS-US)

: H226-Flammable liquid and vapor.
H302-Harmful if swallowed.
H315-Causes skin irritation.
H319-Causes serious eye irritation.
H350-May cause cancer by route of exposure if conclusively proven that no other route applies.
H360-May damage fertility or the unborn child by route of exposure if conclusively proven that no other route applies.
H372-Causes damage to organs through prolonged or repeated exposure by route of exposure if conclusively proven that no other route applies.

Precautionary Statements (GHS-US)

: P201 – Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.
P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

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P233 – Keep container tightly closed.
P240 – Ground/bond container and receiving equipment.
P241 – Use explosion-proof electrical/ventilating/light/equipment.
P242 – Use only non-sparking tools.
P243 – Take precautionary measures against static discharge.
P260 – Do not breathe dust/fumes/gas/mist/vapors/spray.
P264 – Wash thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P280 – Wear protective gloves/clothing/eye protection/face protection.
P281 - Use personal protective equipment as required.
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314 - Get medical advice/attention if you feel unwell.
P308 + P313 - IF exposed or concerned: Get medical advice/attention.
P321 - Specific treatment (see supplemental first aid instructions on this label).
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P370 + P378 - In case of fire: Use suitable extinguishing for extinction.
P337 + P313 - If eye irritation persists: Get medical advice/attention.
P362 - Take off contaminated clothing and wash before reuse.
P403 + P235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 - Dispose of contents/container to an approved landfill.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component

Name	Product Identifier	% (w/w)
Asphalt	(CAS No) 8052-42-4	40-50
Distillates (petroleum), Hydrotreated Light	(CAS No) 64742-47-8	5-10
Stoddard solvent	(CAS No) 8052-41-3	1-3
Carbon black	(CAS No) 1333-86-4	1-3
Oleylamine	(CAS No) 112-90-3	1-3

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

Inhalation: Move to fresh air. Call a physician if symptoms develop or persist.

Skin Contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.

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Indication of Immediate Medical Attention and Special Treatment Needed

General: Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Water fog. Foam. Carbon dioxide (CO₂). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media: Do not use water jet as an extinguisher, as this will spread the fire.

Special Hazards Arising From the Substance or Mixture

Hazardous Combustion Products: Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.

Fire and Explosion Hazards: In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Use standard firefighting procedures and consider the hazards of other involved materials. Flammable liquid and vapor.

Advice for Firefighters

Fire Fighting Procedures: Exercise caution when fighting any chemical fire.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. Prevent entry into waterways, sewer, basements or confined areas

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. Do not breathe mist or vapor. Do not taste or swallow. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink

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or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Storage Requirements

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Eliminate sources of ignition. Avoid spark promoters. These alone may be insufficient to remove static electricity. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

U.S. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Carbon black (CAS 1333-86-4)	PEL	3.5 mg/m ³
Stoddard solvent (CAS 8052-41-3)	PEL	2900 mg/m ³ 500 ppm

U.S. ACGIH Threshold Limit Values

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	TWA	0.5 mg/m ³	Inhalable fraction
Carbon black (CAS 1333-86-4)	TWA	3 mg/m ³	Inhalable fraction
Stoddard solvent (CAS 8052-41-3)			

U.S. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	Ceiling	5 mg/m ³	Fume
Carbon black (CAS 1333-86-4)	TWA	0.1 mg/m ³	
Distillates (petroleum), Hydrotreated Light (CAS 64742-47-8)	TWA	100 mg/m ³	
Stoddard solvent (CAS 8052-41-3)	Ceiling	1800 mg/m ³	
	TWA	350 mg/m ³	

Biological limit values: No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls: Provide eyewash station. Good general ventilation should be used (see CIM IG-9 for additional details). Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection: Wear safety glasses with side shields (or goggles).

Skin protection: Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. Other Wear appropriate chemical resistant clothing.

Respiratory protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Thermal hazards: Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations: Observe any medical surveillance requirements. When using do not smoke. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Liquid
Color	: Black

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Odor	: Mild, hydrocarbon-like
Initial Boiling Point/Boiling Range	: 347 °F (175 °C) estimated
Flammability limit - lower (%)	: .7% estimated
Flammability limit - upper (%)	: 5% estimated
Explosive limit - lower (%)	: .7% estimated
Explosive limit - upper (%)	: 5% estimated
Vapor Pressure	: 3 mm Hg estimated
Vapor Density	: 5% estimated
Auto-ignition temperature	: 410 °F (210 °C) estimated
Viscosity	: 4000 - 7000 cP
Density	: 0.90 g/cm3 estimated
Specific Gravity (H₂O = 1)	: 0.946
VOC	: 88 g/l (as applied)

SECTION 10: STABILITY AND REACTIVITY

Reactivity: The product is stable and non-reactive under normal conditions of use, storage and transport.

Stability: Material is stable under normal conditions.

Conditions to Avoid: Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur.

Hazardous Decomposition Products: No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation: May cause damage to organs through prolonged or repeated exposure by inhalation.

Skin contact: Causes skin irritation.

Eye contact: Causes serious eye irritation.

Ingestion: Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics: Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity: Harmful if swallowed.

Acute: LD50 – Rat - > 8000mg/kg

Skin corrosion/irritation: Causes skin irritation.

Serious eye damage/eye irritation: Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization: Not a respiratory sensitizer.

Skin sensitization: This product is not expected to cause skin sensitization.

Germ cell mutagenicity: May cause genetic defects.

Carcinogenicity: May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

Asphalt (CAS 8052-42-4): 2B Possibly carcinogenic to humans.

Carbon black (CAS 1333-86-4): 2B Possibly carcinogenic to humans.

Stoddard solvent (CAS 8052-41-3): 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens: Not listed.

Reproductive toxicity: This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure: Not classified.

Specific target organ toxicity - repeated exposure: Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard: Not an aspiration hazard.

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Chronic effects: Causes damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity of Components: The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Aquatic: Fish - LC50 – Fish - 41.3867 mg/l, 96 hours estimated

Persistence and degradability: No data is available on the degradability of this product.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Stoddard solvent 3.16 - 7.15

Mobility in soil: No data available.

Other adverse effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations: Dispose in accordance with all applicable regulations

Hazardous waste code: The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging: Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: TRANSPORT INFORMATION

In Accordance with DOT

This material can be reclassified as non-hazardous for DOT Transportation per 49 CFR 173.150 (f). This material can also be shipped as UN1139 Coating Solutions, Class 3, PGIII.

Proper Shipping Name : Not regulated as dangerous goods

IATA

UN Number : UN1139

UN Proper Shipping Name : Coating solution (includes surface treatments or coatings used for industrial or other purposes such as vehicle undercoating, drum or barrel lining) (Asphalt, Stoddard solvent)

Hazard Class : 3

DOT Label Required : Flammable Liquids

Packing Group : III

Environmental Hazards : Yes

Special precautions for user : Read safety instructions, SDS and emergency procedures before handling.

Passenger and cargo : Allowed with restrictions

Cargo aircraft only : Allowed with restrictions

IMDG

UN Number : UN1139

UN Proper Shipping Name : COATING SOLUTION (includes surface treatments or coatings used for industrial purposes such as vehicle under-coating, drum or barrel lining) (Asphalt, Stoddard solvent), MARINE POLLUTANT

Hazard Class : 3

Packing Group : III

Environmental Hazards : Yes

Special precautions for user : Read safety instructions, SDS and emergency procedures before handling.

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SECTION 15: REGULATORY INFORMATION

US federal regulations: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4): Asphalt (CAS 8052-42-4) Listed.

SARA 304 Emergency release notification: Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Immediate Hazard - Yes

Delayed Hazard - Yes

Fire Hazard - Yes

Pressure Hazard - No

Reactivity Hazard - No

SARA 302 Extremely hazardous substance: Not listed.

SARA 311/312 Hazardous Chemical: No

SARA 313 (TRI reporting): Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130): Not regulated.

Safe Drinking Water Act: Not regulated.

US State regulations: Fumes of asphalt are listed by California Prop 65. As supplied and applied the CIM product will not exhibit asphalt fumes. Carbon black is listed due to its respirable nature in powder form. As supplied and applied the carbon black is bound within the CIM matrix and is not expected to be in a respirable form.

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100): Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a)):

Asphalt (CAS 8052-42-4)

Carbon black (CAS 1333-86-4)

Distillates (petroleum), Hydrotreated Light (CAS 64742-47-8)

Stoddard solvent (CAS 8052-41-3)

U.S. Massachusetts RTK - Substance List

Asphalt (CAS 8052-42-4)

Carbon black (CAS 1333-86-4)

Distillates (petroleum), Hydrotreated Light (CAS 64742-47-8)

Stoddard solvent (CAS 8052-41-3)

U.S. New Jersey Worker and Community Right-to-Know Act

Asphalt (CAS 8052-42-4)

Carbon black (CAS 1333-86-4)

Distillates (petroleum), Hydrotreated Light (CAS 64742-47-8)

Stoddard solvent (CAS 8052-41-3)

U.S. Pennsylvania Worker and Community Right-to-Know Law

Asphalt (CAS 8052-42-4)

Carbon black (CAS 1333-86-4)

Distillates (petroleum), Hydrotreated Light (CAS 64742-47-8)

Stoddard solvent (CAS 8052-41-3)

U.S. Rhode Island RTK

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Not regulated.

U.S. California Proposition 65

Fumes of asphalt are listed by California Prop 65. As supplied and applied the CIM product will not exhibit asphalt fumes.

Carbon black is listed due to its respirable nature in powder form. As supplied and applied the carbon black is bound within the CIM matrix and is not expected to be in a respirable form. California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

U.S. - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Asphalt (CAS 8052-42-4) Listed: January 1, 1990

Carbon black (CAS 1333-86-4) Listed: February 21, 2003

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

SECTION 16: OTHER INFORMATION

Revision Date : 08/09/2017

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

Party Responsible for the Preparation of This Document : The Garland Company, Inc.
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Cleveland, Ohio 44105-2197
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This information is based on our knowledge as of the Revision Date and is intended to describe the product only for the purposes of health, safety and environmental requirements as of the Revision Date. It should not therefore be construed as guaranteeing any specific property of the product nor as providing any warranty, expressed or implied. The user assumes all responsibility, liability, risk of loss, damage, or expense arising out of, or in any way connected with, the handling, storage, use, or disposal of the product.

North America GHS US 2017 & WHMIS

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SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Liquid

Product Name: Tuff-Flash™ LO Plus Part B

Product Code: 7817-5

Intended Use of the Product

Activator. For professional use only.

Name, Address, and Telephone of the Responsible Party

Manufacturer

The Garland Company, Inc.
3800 East 91st Street
Cleveland, Ohio 44105-2197
T-800-762-8225
F-216-641-0633
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Supplier

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209 Carrier Drive
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www.garlandco.com

Emergency Telephone Number

Emergency Number: 1-800-262-8200 (CHEMTREC)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Acute Tox. 4	H302
Skin Irrit. 2	H315
Skin Sens. 1	H317
Eye Dam. 2A	H319
Germ Cell Muta. 1	H360
Carc. 2	H351
STOT SE 2	H371
STOT RE 2	H373

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)



Signal Word (GHS-US)

: Warning

Hazard Statements (GHS-US)

: H302-Harmful if swallowed.
H315-Causes skin irritation.
H317-May cause an allergic skin reaction
H319-Causes serious eye irritation.
H351-Suspected of causing cancer by route of exposure if conclusively proven that no other route applies
H371-May cause damage to organs by route of exposure if conclusively proven that no other route applies
H373-May cause damage to organs through prolonged or repeated exposure by route of exposure if conclusively proven that no other route applies

Precautionary Statements (GHS-US) :

P201 – Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.
P260 – Do not breathe dust/fumes/gas/mist/vapors/spray.
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 – Wash thoroughly after handling.

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P270 - Do not eat, drink or smoke when using this product.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P280 - Wear protective gloves/clothing/eye protection/face protection.
P281 - Use personal protective equipment as required.
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 + P311 - IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
P314 - Get medical advice/attention if you feel unwell.
P308 + P313 - IF exposed or concerned: Get medical advice/attention.
P321 - Specific treatment (see supplemental first aid instructions on this label).
P337 + P313 - If eye irritation persists: Get medical advice/attention.
P362 - Take off contaminated clothing and wash before reuse.
P363 - Wash contaminated clothing before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to an approved landfill.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component

Name	Product Identifier	% (w/w)
4,4'-METHYLENEDIPHENYL DIISOCYANATE	(CAS No) 26447-40-5	60-70
TRIETHYL PHOSPHATE; (TEP)	(CAS No) 78-40-0	1-3
Other components below reportable levels		30-40
(Isomer) 4,4'-Methylenediphenyl diisocyanate	(CAS No) 101-68-8	61-66

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin Contact: Remove contaminated clothing immediately and wash skin with soap and water. Remove contaminated clothing. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. Wash contaminated clothing before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.

Indication of Immediate Medical Attention and Special Treatment Needed

Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General: IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Water fog. Foam. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide.

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Unsuitable Extinguishing Media: Water. Do not use water jet as an extinguisher, as this will spread the fire.

Special Hazards Arising From the Chemical: During fire, gases hazardous to health may be formed.

Advice for Firefighters

Fire Fighting Procedures: Move containers from fire area if you can do so without risk. Use standard firefighting procedures and consider the hazards of other involved materials. No unusual fire or explosion hazards noted

Protection During Firefighting: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. Do not breathe mist or vapor. Do not taste or swallow. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Storage Requirements

Store locked up. Store in original tightly closed container. Store away from incompatible materials.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

U.S. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)	Ceiling	.2 mg/m ³

U.S. ACGIH Threshold Limit Values

Components	Type	Value
4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)	Ceiling	.005 mg/m ³

U.S. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)	Ceiling	.2 mg/m ³

U.S. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
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TRIETHYL PHOSPHATE; TWA 7.45 mg/m3
(TEP) (CAS 78-40-0)

Biological limit values: No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection: Wear safety glasses with side shields (or goggles).

Skin protection: Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. Other Wear appropriate chemical resistant clothing.

Respiratory protection: Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards: Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations: Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Liquid
Color	: Light amber
Odor	: Mild
Initial Boiling Point/Boiling Range	: 597 °F (313.89 °C) estimated
Flash Point	: 425.0 °F (218.3 °C)
Vapor Pressure	: 0.0003 mm Hg
Vapor Density	: 5% estimated
Auto-ignition temperature	: 410 °F (210 °C) estimated
Specific Gravity (H ₂ O = 1)	: 1.2 estimated
VOC	: 88 g/l (as applied)

SECTION 10: STABILITY AND REACTIVITY

Reactivity: The product is stable and non-reactive under normal conditions of use, storage and transport.

Stability: Material is stable under normal conditions.

Conditions to Avoid: Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Possibility of Hazardous Reactions: No dangerous reaction known under conditions of normal use.

Hazardous Decomposition Products: No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation: Prolonged inhalation may be harmful. May cause damage to organs through prolonged or repeated exposure by inhalation. May cause irritation to the respiratory system.

Skin contact: Causes skin irritation. May cause an allergic skin reaction.

Eye contact: Causes serious eye irritation.

Ingestion: Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics: Dermatitis. Rash. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. May cause respiratory irritation.

Information on toxicological effects

Acute toxicity: Harmful if swallowed. May cause an allergic skin reaction. May cause respiratory irritation.

Acute

Product: Tuff-Flash™ LO Plus Part B

Dermal

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LD50 – Guinea pig - 1712.0001 g/kg

Rabbit - 1600.0001 g/kg

Inhalation

LC50 – Rat - 705.3601 mg/l, 4 Hours estimated

Oral

LD50 – Mouse - 120.0001 g/kg estimated

Rabbit - 128 g/kg estimated

Rat - 128 g/kg estimated

Other

LD50 – Mouse - 38.8 g/kg estimated

Rabbit - 64 g/kg estimated

Rat - 64 g/kg estimated

Product: TRIETHYL PHOSPHATE; (TEP) (CAS 78-40-0)

Dermal

LD50 – Guinea pig - > 21.4 g/kg

Rabbit - > 20 g/kg

Inhalation

LC50 – Rat - > 8.817 mg/l, 4 Hours

Oral

LD50 – Mouse - > 1.5 g/kg

Rabbit - 1.6 g/kg

Rat - 1.6 g/kg

Other

LD50 – Mouse - 0.485 g/kg

Rabbit - 0.8 g/kg

Rat - 0.8 g/kg

Product: 4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)

Inhalation

LC50 – Rat - 0.369 mg/l, 4 Hours

Skin corrosion/irritation: Causes skin irritation.

Serious eye damage/eye irritation: Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization: Not available

Skin sensitization: May cause an allergic skin reaction

Germ cell mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic

Carcinogenicity: Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8): 3 Not classifiable as to carcinogenicity to humans.

4,4'-METHYLENEDIPHENYL DIISOCYANATE (CAS 26447-40-5) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not listed.

Reproductive toxicity: This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure: May cause respiratory irritation.

Specific target organ toxicity - repeated exposure: May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard: Not available

Chronic effects: Prolonged inhalation may be harmful. May cause damage to organs through prolonged or repeated exposure.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity of Components: The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Aquatic: Fish - LC50 – Fish - 88000 mg/l, 96 hours estimated

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Persistence and degradability: No data is available on the degradability of this product.

Bioaccumulative potential: No data available.

Partition coefficient n-octanol / water (log Kow): TRIETHYL PHOSPHATE; (TEP) = 0.8

Mobility in soil: No data available.

Other adverse effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations: Dispose in accordance with all applicable regulations

Hazardous waste code: The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

Since emptied containers may retain product residue, follow label warnings even after container is emptied.

SECTION 14: TRANSPORT INFORMATION

In Accordance with DOT

This material can be reclassified as non-hazardous for DOT Transportation per 49 CFR 173.150 (f). This material can also be shipped as UN1139 Coating Solutions, Class 3, PGIII.

Proper Shipping Name : Not regulated as dangerous goods

IATA

UN Number : Not regulated as dangerous goods

IMDG

UN Number : Not regulated as dangerous goods

SECTION 15: REGULATORY INFORMATION

US federal regulations: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4): 4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8) Listed

SARA 304 Emergency release notification: Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not listed

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Immediate Hazard - Yes

Delayed Hazard - Yes

Fire Hazard - No

Pressure Hazard - No

Reactivity Hazard - No

SARA 302 Extremely hazardous substance: Not listed.

SARA 311/312 Hazardous Chemical: No

SARA 313 (TRI reporting): 4,4'-Methylenediphenyl diisocyanate 101-68-8 61 - 66

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: 4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130): Not regulated.

Safe Drinking Water Act: Not regulated.

US State regulations:

U.S. Massachusetts RTK - Substance List

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4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)

U.S. New Jersey Worker and Community Right-to-Know Act

4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)

4,4'-METHYLENEDIPHENYL DIISOCYANATE (CAS 26447-40-5)

U.S. Pennsylvania Worker and Community Right-to-Know Law

4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)

U.S. Rhode Island RTK

4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)

U.S. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

SECTION 16: OTHER INFORMATION

Revision Date : 08/09/2017

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

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This information is based on our knowledge as of the Revision Date and is intended to describe the product only for the purposes of health, safety and environmental requirements as of the Revision Date. It should not therefore be construed as guaranteeing any specific property of the product nor as providing any warranty, expressed or implied. The user assumes all responsibility, liability, risk of loss, damage, or expense arising out of, or in any way connected with, the handling, storage, use, or disposal of the product.

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